

## A new species of the mygalomorph spider genus *Yilgarnia* from the Western Australian wheatbelt (Araneae: Nemesiidae)

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**Abstract** – A new species of *Yilgarnia* Main from the central wheatbelt of Western Australia is described. Natural history notes are presented and recognition stated of a wider geographic distribution of the genus than previously recorded.

### INTRODUCTION

The nemesiid spider genus *Yilgarnia* Main 1986, formerly placed in the Dipluridae, was described in 1986 and although known to be widely distributed in southern Western Australia, it was originally described as monotypic (Main 1986). The genus is now known to be much more extensive in terms of its diversity and distribution; specimens are known from as far north as the Kimberley (Main 1991). A new species is described here from the central wheatbelt of Western Australia. Although most species (still undescribed) have been collected as singletons or in low numbers, the species described here apparently occurs in surprising density at some locations. The apparent dwarfism of the males is also of interest. However as no females have been collected in association with such males it is not known whether they really are “dwarfs” or whether the females also are small compared to other species.

The purpose of this paper is to describe a new species of *Yilgarnia* from the central wheatbelt region of Western Australia.

### METHODS

Specimens were examined with a Zeiss Citoval dissecting microscope and measurements made using an eyepiece micrometre. All measurements are in millimetres. Drawings were made free hand on tracing paper overlaid on millimetre/centimetre graph paper while viewing a specimen with a squared graticule in the microscope eye piece.

In the leg measurements the leg formula is the leg length divided by the carapace length. The tibial index =  $100 \times \text{dorsal proximal width of patella} / \text{length of tibia} + \text{patella}$  (Petrunkevitch 1942).

The specimens used in this study are lodged

in the following institutions: Western Australian Museum, Perth (WAM) and the Barbara York Main collection (housed in the School of Animal Biology, formerly in the Zoology Department), University of Western Australia (BYM).

### SYSTEMATICS

#### Family Nemesiidae Simon 1889

#### Genus *Yilgarnia* Main 1986

*Yilgarnia* Main 1986: 396.

#### Type species

*Yilgarnia currycomboides* Main 1986, by original designation.

#### Remarks

As currently diagnosed the genus is distinguished primarily by the presence of a group of “curry comb” like spines on the proximal ventral face of the third and fourth coxae. It has some similarity with *Kwonkan* Main 1983 in the palpal configuration of the male and the terminally branched spermathecal tubes of the female (which characters however are also shared with a group of *Aname* species) (Main 1983). It is also distinguished from *Kwonkan* by the absence of tarsal spines. However some problematic specimens have recently been recorded from the Carnarvon Basin and collected personally in the Pilbara (BYM, unpublished data) that have both tarsal spines and “currycomb” like spines on the third and fourth coxae [referred to as “*Kwonkan/Yilgarnia*” in Main *et al.* (2000)]. The taxonomic status of these specimens requires further study if the morphological limits of *Kwonkan* and *Yilgarnia* are to be resolved.

To date only the type species of *Yilgarnia* has been described.

*Yilgarnia linnaei* sp. nov.

Figures 1–9

**Material examined***Holotype*

**Australia: Western Australia:** ♂, Durokoppin Nature Reserve (31°23'30" to 31°25'30"S, 117°42'E to 117°48'E), Northwest Tip (see Main 1996), transect G (= 700 m east of western boundary), wet pit trap, 6–27 May 1987, B.Y. Main (WAM T89289; BYM 1987/83).

*Paratypes*

**Australia: Western Australia:** Durokoppin Nature Reserve, Northwest Tip (see Main 1996), wet pitfall traps, B.Y. Main: 7 ♂, 6–27 May 1987 (BYM 1987/73–77, 79); 3 ♂, 27 May–23 June 1987 (BYM 1987/86, 88, 89); 1 ♂, 23 June–4 August 1987 (BYM 1987/99); 2 ♂, 20 March–3 May 1988 (BYM 1988/5,6); 8 ♂, 3 May–25 June 1988 (BYM 1988/13–17, 24–26); 11 ♂, 13 March–3 May 1989 (WAM T92128–92129; BYM 1989/10, 11) (BYM 1989/12–20); 2 ♂, 17 March–2 May 1989 (BYM 1989/3, 9); 5 ♂, 17 March–3 May 1989 (BYM 1989/4–7, 36); 11 ♂, 3 May–3 June 1989 (BYM 1989/26–28, 32–35, 45–48); 1 ♂, 3 June–8 July 1989 (BYM 1989/57); 2 ♂, 7 February–29 April 1990 (BYM 1990/53, 54); 3 ♂, 4 June–19 July 1990 (BYM 1990/56, 57, 67); 2 ♂, 20 February–29 April 1991 (BYM 1991/1, 2); 20 ♂, 29 April–2 July 1991 (WAM T92130–92132; BYM 1991/19–21) (WAM T92133–92135; BYM 1991/27–29) (BYM 1991/22–26, 30–34, 37, 38, 40, 44); 1 ♂, 2 July–30 July 1991 (BYM 1991/45).

*Other material*

**Australia: Western Australia:** North Bungulla Nature Reserve (31°32'S, 117°35'E), all from pitfall traps, B.Y. Main: 1 ♂, 30 August 1969 (BYM 1969/60); 1 ♂, 22 June 1983 (BYM 1983/147); 1 ♂, 22 June–1 August 1983 (BYM 1983/210); 2 ♂, Heitman's Scrub, 14.5 km north of Bungulla (31°30'S, 117°34'E), 26 July 1970, pitfall trap, B.Y. Main (BYM 1970/40, 41); 1 ♂, East Yorkrakine Nature Reserve (31°28'S, 117°41'E), 19–29 May 1989, pitfall trap, G. Friend (WAM T40709).

**Diagnosis**

*Yilgarnia linnaei* differs from *Y. currycomboides* and all other known (but unnamed) species of the genus by the remarkably small size of at least the males, with carapace length of less than three millimetres which is less than half that of *Y. currycomboides*. The tibial spur of leg I poorly developed (possibly the result of neotenic maturation) but with a heavy megaspine.

**Description***Male holotype*

**Colour:** generally yellowish/tan, abdomen dorsally with dark brown mottlings, pale transverse bars (Figure 2), venter very pale, legs I with reddish tinge.

**Carapace:** length 2.6 mm, width 1.8, marginal hairs, thin spines (Figure 1). **Eye group:** 0.6 mm wide, 0.3 mm long.

**Chelicerae:** long, narrow, dorsally with delicate bristles; rastellum ~7 very heavy tooth-like spines (Figure 5). Cheliceral teeth on promargin, (right) 7 large teeth with 3 basal granules, left 7 large, 4 basal granules.

**Sternum:** 1.4 mm long, 1.0 mm wide; labium 0.2 mm long; delicate hairs and bristles; sternal sigilla very faint, almost imperceptible (Figure 3).

**Coxae:** III and IV with group of retro-ventral short curved spines, about 25 on IV and fewer on III (Figure 4).

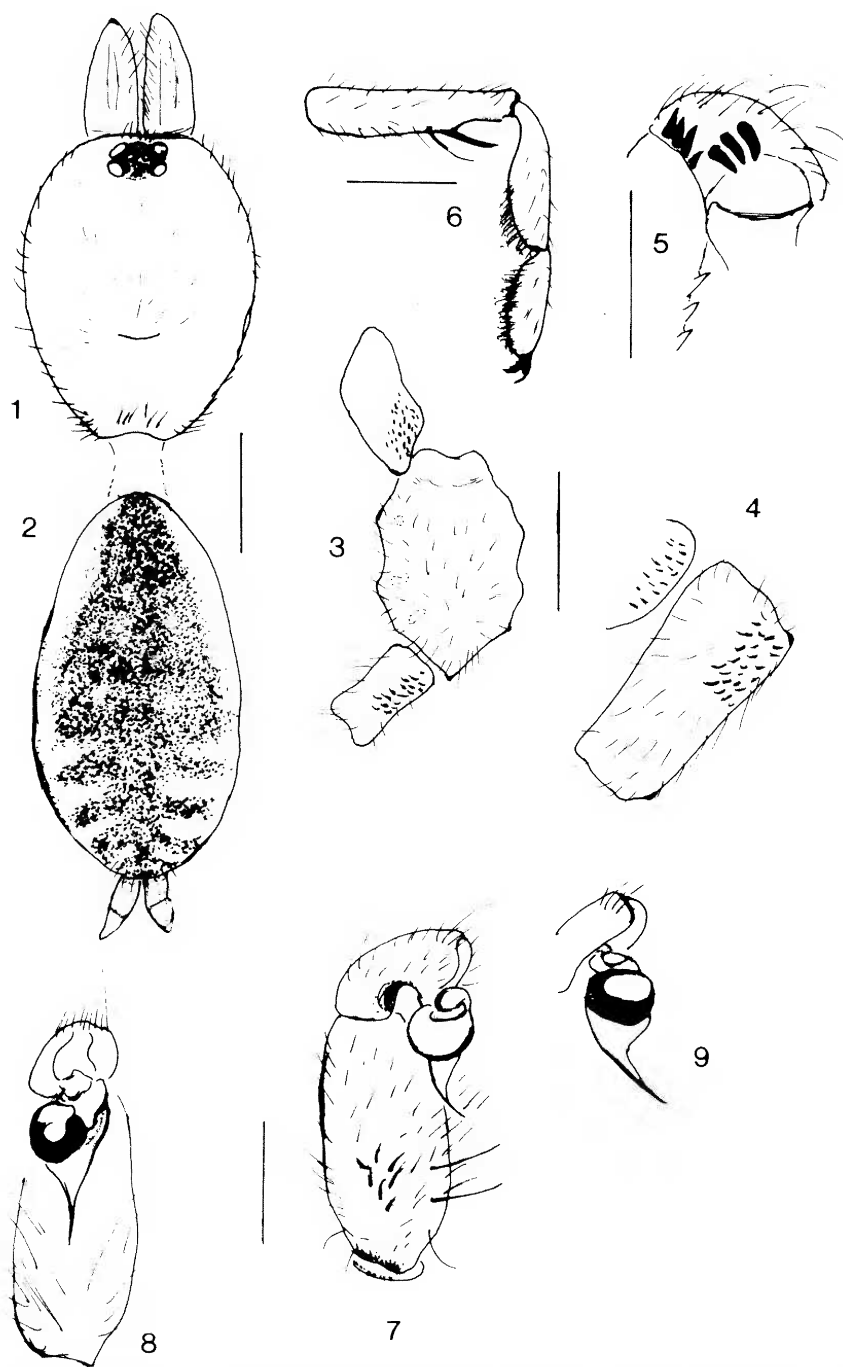
**Legs:** spination and other features: all femora with dorsal line of 3–5 delicate spines. Leg I: femur, in addition to dorsal line, prodorsal 1 apical; patella prodorsal 2; tibia (Figure 6) with poorly developed spur but heavy megaspine, 1 ventral spine beneath, prodorsal 1; metatarsus and tarsus 0; metatarsus and tarsus ventrally inflated, dense scopula, metatarsus with slight ventral elbow (or "bowed"). Leg II: patella prodorsal 2; tibia retrodorsal 1-1-1; metatarsus retroventral 1. Leg III: patella prodorsal 3; tibia dorsal 2, retrodorsal 1 apical, prolateral 2, retroventral 1-1, ventral 3 apical; metatarsus dorsal 1-1-2-3 (apical), retroventral 1-2, ventral 3 apical. Leg IV: patella 0; tibia retrodorsal 2, retroventral 1 apical, ventral 2-1-2-3 (apical); metatarsus dorsal 2, retrodorsal 1, 3 apical, ventral 2-1-2-1-3 apical (very delicate).

**Legs:** Leg formula: 4/3.5, 1/3.0, 2/2.73, 3/2.61. Measurements: Leg I: femur 2.2, patella 1.1, tibia 1.9, metatarsus 1.6, tarsus 1.1, total 7.9. Leg II: femur 2.0, patella 1.1, tibia 1.7, metatarsus 1.3, tarsus 1.0, total 7.1. Leg III: femur 1.7, patella 0.9, tibia 1.2, metatarsus 1.7, tarsus 1.3, total 6.8. Leg IV: femur 2.4, patella 1.2, tibia 2.5, metatarsus 1.9, tarsus 1.3, total 9.3. Palp: femur 1.0, patella 0.8, tibia 1.0, tarsus 0.6, total 3.4. Proximal width patella I = 0.4 mm; tibial index = 13.33. Proximal width patella IV = 0.3 mm, tibial index = 8.1.

**Palp** (Figures 7, 8, 9): length of bulb plus embolus (ventral) = 1.0 mm, embolus curved, tapering. Tibia with small group of short, curved delicate spines on retrolateral face.

**Remarks**

All specimens were found in shrubland/heath (wodjil) habitats dominated by acacias and



Figures 1–9 *Yilgarnia linnaei* sp. nov., holotype male: 1, carapace and chelicerae; 2, dorsal aspect abdomen; 3, sternum, labium, right palpal coxa (maxilla) and right coxa IV; 4, right coxa IV and inner angle of coxa III; 5, rastellum teeth on paturon of left chelicera, apical aspect; 6, right leg I, tibia, metatarsus, tarsus, retrolateral view; 7, 8, 9, right palp, tibia, tarsus, bulb and embolus; 7, retrolateral view (note juxtaposition from normal of bulb); 8, ventral; 9, bulb/embolus (note "normal" retrolateral view/position). Scale lines = 1 mm (Figures 1, 2, 3, 6, 7); 0.5 mm (Figures 5, 7); Figures 4, 8, 9 not to scale.

*Allocasuarina* species with a mixture of other shrubs and tussocky vegetation and with sandy/loam soil. The species appears to be reproductively active in winter as all the specimens collected by BYM were from pitfall traps open throughout the year; those at Durokoppin, open continuously for over five years and males were collected mostly between April and August with a few "catches" possibly in March. The Durokoppin specimens were collected in association with an ecological study considering the effects of fire on mygalomorph spiders in the locality (to be presented separately elsewhere) and also as part of a systematic survey of the mygalomorph fauna of selected bush remnants (including nature reserves) in the central wheat belt (see Main 1996). Of special interest is the large number of specimens found in the pits at Durokoppin during some years, which suggests a surprising population density. Although *Yilgarnia* specimens have been collected from silk-lined burrows at other localities they are extremely cryptic. The entrances, when open form a slightly hooded collapsible collar.

### Etymology

This species is named in honour of Carl Linnaeus whose instigation of the binomial system for biological taxonomy has given systematists the only lasting and guiding framework for the naming of species.

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### REFERENCES

- Main, B.Y. (1983). Further studies on the systematics of Australian Diplurinae (Chelicerata: Mygalomorphae: Dipluridae): two new genera from south-western Australia. *Journal of Natural History* **17**: 923–949.
- Main, B.Y. (1986). Further studies on the systematics of Australian Diplurinae (Araneae: Mygalomorphae: Dipluridae): a new genus from south-western Australia. *Records of the Western Australian Museum* **12**: 395–402.
- Main, B.Y. (1991). Kimberley spiders: rainforest strongholds. In: McKenzie, N.I., Johnston, R.B. and Kendrick, P.G. (eds) *Kimberley Rainforests* (pp. 271–293). Surrey Beatty and Sons: Chipping Norton, NSW.
- Main, B.Y. (1996). Microcosmic biogeography: trapdoor spiders in a time warp at Durokoppin. In: Hopper, S.D., Chappill, J.A., Harvey, M.S. and George, A.S. (eds), *Gondwanan Heritage: Past, present and future of the Western Australian biota* (pp. 163–171). Surrey Beatty and Sons: Chipping Norton, NSW.
- Main, B.Y., Sampey, A. and West, P.L.J. (2000). Mygalomorph spiders of the Southern Carnarvon Basin, Western Australia. *Records of the Western Australian Museum, Supplement* **61**: 281–293.
- Petrunkévitch, A. (1942). A study of amber spiders. *Transactions of the Academy of Arts and Sciences* **34**: 119–464.

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